

NATIONAL DEFENSE UNIVERSITY

NATIONAL WAR COLLEGE

**21st CENTURY AIR POWER THEORISTS: WHO HAS IT RIGHT JOHN WARDEN OR
ROBERT PAPE?**

JEFFREY G. LOFGREN

5605

DOING NATIONAL MILITARY STRATEGY

PROFESSOR

CAPT CRAIG RANKIN

ADVISOR

COLONEL JOHN ZIELINSKI

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2002		2. REPORT TYPE		3. DATES COVERED 00-00-2002 to 00-00-2002	
4. TITLE AND SUBTITLE 21st Century Air Power Theorists: Who Has It Right John Warden or Robert Pape?				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National War College, 300 5th Avenue, Fort Lesley J. McNair, Washington, DC, 20319-6000				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT see report					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 14	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

21st CENTURY AIR POWER THEORISTS: WHO HAS IT RIGHT JOHN WARDEN OR ROBERT PAPE?

Today air power is the most difficult of all forms of military force to measure, or even to express in precise terms"

Winston Churchill, *The Gathering Storm*, 1948

The use of air power has dramatically shaped the modern battlefield since its inception. Because there are no boundaries restricting where air power can go, it has the unique ability to employ and influence the outcome of a conflict at all levels of warfare from strategic to tactical. This is the central theme of air power that theorists like Italian, Giulio Douhet, American, William "Billy" Mitchell, and Englishman, Hugh Trenchard have advocated as a unique and an extremely powerful means of warfare, capable of compelling an enemy to concede in order to achieve the countries desired ends or objectives.

Whichever theory senior military leaders follow heavily influences the military strategy they pursue. Theory then becomes the foundation for military strategy. The impact of theory on military strategy therefore, logically influences the Services to invest in forces in order to accomplish and support that strategy. For example, the theory of strategic bombardment dominated military strategy during and after World War II. The U.S. Air Force, in support of that strategy, built an enormous bomber fleet.

The two prominent theorists in today's air power debate are John Warden III, a retired Air Force Colonel and Robert Pape, a Professor of Government at Dartmouth College. Warden's theory contends that air power can be used to influence the adversary's leadership or decision-making entity. In contrast, Pape proclaims that air power should coerce an adversary through denial of the adversary's ability to use its military to achieve its objective.

This paper will summarize the theories of John Warden III and Robert Pape and then point out their strengths and weaknesses. Then describe the linkage between theory, military strategy, and the budget; thereby showing how air power theory in turn affects the budget. Finally, this paper will argue that Warden and Pape's theories are complementary and that senior leadership should consider both when developing military strategy and the budget.

WARDEN THEORY

In Warden's book, *The Air Campaign: Planning for Combat*, he emphasized the goal of translating strategic objectives into a theater air campaign plan. Taking a central theme from Clausewitz, Warden believes strategists must understand the political and military objectives and the nature of the enemy. Consequentially, Warden devised a model to analyze the adversary as a system. "If we are going to think strategically, we must think of the enemy as a system comprised of numerous subsystems ... we must focus on the totality of our enemy, then on our objectives, and next on what must happen to the enemy before our objectives become his objectives."¹ The essence of Warden's approach is to analyze the enemy as a system, peeling back each layer in an effort to find out where to focus air power in order to force the adversary to comply with the political objectives. To make it easier for everyone to visualize the concept Warden, "laid it out in the graphical form of five concentric rings with the leadership ring at the center."² Warden states, "The military -- fielded forces are but one part of the system and the most peripheral -- and that the leadership ring is of central importance."³ Warden defines each of the rings as follows:

"Every organization has a leadership function to give it direction and help it respond to change in its external and internal environments; every living entity has an energy conversion function to take one form of energy and convert it into a different kind of energy; each has an infrastructure to hold it together; each has a population; and each has field forces to protect and project the organization."⁴

Using DESERT STORM as an example, Warden's planners began their thinking at the center leadership ring, as only at the center can a single input of energy lead to a significant change in the system.⁵ However, Warden also notes that this does not happen often and, "it would be a poor strategist who bet everything on it."⁶ Therefore, Warden's theory calls for bringing the entire system under rapid or parallel attack preventing the enemy from finding ways to counter the operation.⁷ Warden, like the air power theorists before him, believes in the unique aspect that air power knows no boundaries and can influence the conflict at all levels from strategic to tactical. That capability is even more powerful with the advent of precision weapons and stealth aircraft which make it possible to leave the old serial means of warfare and instead conduct parallel or simultaneous warfare on the entire system.

To accomplish this parallel warfare, Warden emphasizes the importance of finding the enemy's centers of gravity. He contends that each ring has a center, or centers, of gravity and if several centers of gravity are involved, force must be applied to all if the objective is to be achieved.⁸ The key is to find those centers of gravity that are directly or indirectly tied to the inner ring. If the leadership ring is not vulnerable, then targeting the other centers of gravity will effectively produce the desired end state which forces the adversary to comply with desired political objectives.⁹ Warden does acknowledge that there might be circumstances at the start of a conflict that may make certain center(s) of gravity not reachable initially and dictate that immediate actions such as striking forces are necessary to produce a short-term strategic impact, thus enabling air power to attack the real center of gravity.¹⁰

The key to this theory starts with achieving air superiority. Warden states that, "Air superiority is a necessity."¹¹ Warden believes that, "all operations must be subordinated -- to the extent required -- to its attainment."¹² He is not advocating that achieving air superiority be the

only task of air power during the start of a conflict but until it is won, “no other operation should be commenced if it is going to jeopardize the primary mission” of attaining air superiority.¹³

Finally, in Warden’s revised edition book he addresses the thorny issues commanders may face regarding priorities for air power between air superiority, interdiction and close air support. In the first case, an emergency situation such as in a fast moving enemy ground offensive, Warden believes air power should not give up on air superiority and interdiction unless the battle is determined to be, “unquestionably the decisive battle of the war; if withdrawal of the military is impossible; if losing the battle means surrender; if the battle will certainly end in a few days; and if stopping the enemy positively means no further enemy offensives before friendly air and ground forces can be rebuilt.”¹⁴

The second case is the issue of allocating air assets between interdiction and close air support. Warden states, “The primary emphasis (after air superiority) is going to be on interdiction.”¹⁵ However, he then goes on to define three types of interdiction. Distant interdiction which targets the source of enemy supply, intermediate interdiction, which focuses on transportation nodes and theater movement targets, and the last type close interdiction (more commonly called close air support), targeting fielded forces.¹⁶ He acknowledges that the “air commanders must direct operations that meet the ground commanders explicit needs.”¹⁷ Yet, he contends that “this does not mean that air should be subordinated to the ground commander.”¹⁸

The final case deals with the dilemma of simultaneous tasking of air superiority, interdiction and close air support. In this case, Warden falls back on the principle of concentration. He states, “Concentration probably is the most important principle of air war” and that “the commander must remember how dangerous it is to try other missions before air superiority is won.”¹⁹

PAPE THEORY

In contrast to Warden, Professor Pape believes air power is best used against fielded forces. The basis of Pape's theory is the only way to achieve political objectives is to influence an enemy by military coercion in the form of theater air power, not strategic air power. Pape states, "Theater air power is a much stronger coercive tool, useful in short wars as well as long and against irregular as well as regular forces."²⁰ For Pape's theory to work he says, "Theater air attack is effective only when combined with simultaneous pressure from ground forces." The application of air power is designed to disperse the forces leading to piecemeal defeats, because air power can interdict reserves and transportation supply routes thus isolating units.²¹ Once units are isolated they can be overwhelmed by ground forces and close air support before logistical links can be reestablished.²² Pape describes this approach as the "hammer and anvil" use of ground and air power.²³

This "hammer and anvil" approach is based on how coercion achieves victory. Pape "maintains that coercion, at least in conventional wars, succeeds when force is used to exploit the opponent's military vulnerabilities, thereby making it infeasible for the opponent to achieve its political goals by continued military efforts."²⁴ In Pape's book he describes two fundamental types of coercion; coercion by punishment and coercion by denial. In coercion by punishment, air power raises the costs or risks to civilian populations or by killing large numbers of military personnel to exploit the casualty sensitivities of the opponent.²⁵ In denial coercion air power is used to prevent the enemy from attaining its political objective or territorial goals by negating its military capability. Once the enemy is persuaded it cannot achieve its objective militarily, then the state concedes in order to avoid losses for no gain.²⁶

In the application of air power in a denial strategy against conventional and unconventional (guerrilla) force he states, “The important difference between the two strategies is that conventional war is highly dependent on logistical and communications networks and guerrilla war is not.”²⁷ Pape contends that air power in a conventional war can disrupt logistical and communications networks, but in guerrilla war they are not vulnerable so the only way to beat this adversary is to separate the guerrillas from the population.²⁸

When air power can be used the advances in aircraft, stealth, and weapons have made it a more powerful coercive instrument.²⁹ In order to wage a successful coercive air campaign, the coercer must have a stronger military, achieve air superiority over the disputed territory and still retain sufficient aircraft for bombing operations.³⁰

Regarding bombing operations, Pape differentiates between strategic and interdiction bombing. He defines strategic bombing, which will not be effective, as “attacks on fixed military, industrial, or civilian targets in or near the political or economic centers.”³¹ Whereas the proper use of air power is interdiction bombing. It attacks “lines of supply between military production and the combat theater as well as theater logistics, command centers, and fielded forces, usually in support of friendly ground forces.”³² In summation, Pape’s denial theory of air power calls for “smashing enemy military forces, weakening them to the point where friendly ground forces can seize disputed territories without suffering unacceptable losses.”³³

THEORIES STRENGTHS AND WEAKNESSES

In examining these theories the first thing that comes to light is that both theories are based on the traditional state-on-state conventional war. However, right after the September 11 terrorist attack, Warden published an article, *Terrorists are More Vulnerable than Most Realize*, showing how his system approach could be used against Al Qaeda, thus indicating some of the

versatility of his theory.³⁴ Pape, in his book, identifies the unconventional threat but does not address how air power might be used in this scenario even stating that “guerrillas should be largely immune to coercion; coercers should expect to pay the full cost of military success to extract political concessions.”³⁵ In Pape’s theory how to utilize air power in this case is unclear and whether a state is willing to pay the full price associated with a protracted (Vietnam like) war is questionable.

Warden’s theory focuses on leadership, but not all systems have leadership as the critical center of gravity. In Vietnam, it was not the American leadership that was the center of gravity, but instead the American society which pressured leadership into withdrawal. Another example of how leadership may not be the center of gravity is the United States structure. In the United States political and military structures have built in redundancies and forces often operate on commander’s intent not requiring direct control.

On the opposite end of the five ring system is Pape, whose theory calls for only attacking fielded forces. He discounts leadership types, like autocratic leaders who do not care about sacrificing their military forces and would only concede if air and ground forces not only seized the occupied territory, but also invaded the sovereign state and threatened the longevity of the regime. Additionally, this approach does not account for the “fog and friction” involved in force-on-force conflict. There are many cases of weaker forces winning over stronger forces. The field of uncertainty is the reality of war.

Regarding the desire for air superiority, Warden goes too far in stating that air superiority must come first at the expense of supporting the ground commander. In today’s joint environment the majority of senior leaders acknowledge the value of gaining air superiority, but not at the exclusion of protecting ground forces. Furthermore, it is not acceptable to American airmen to allow friendly ground forces to come under fire without providing some kind of

support. In Pape's theory, he calls for establishing "local air superiority" over the fielded forces. The problem with local air superiority is in the definition. What defines local and just how much airspace is required is always contentious. The best way to gain air superiority is to go offensive and take the enemy air and surface-to-air system out where they reside.

In Pape's theory he states coercion through punishment or decapitation (leadership targeting) by strategic bombing does not work.³⁶ This discounts the second and third order effects of strategic bombing on the decision-makers to continue the conflict. It also means the United States should take a force-on-force mentality with our air power, using it only on military forces which would limit commander's options and impact force structure.

Overall, Warden's theory does provide a valuable tool to critically analyze an adversary and determine options on how best to use air power. The process forces intelligence, the services and commanders to think about the conflict, understand the enemy, the objectives, end state and then tie the application of air power to a military strategy in order to achieve those objectives. Pape's theory also provides valid guidance for the application of air power. His concept of the "hammer and anvil" stresses the importance of the synergistic affect of combining both air and ground power against an adversary.

BUDGET IMPLICATIONS

Now why is it important to understand the strengths and weaknesses of these modern day air power theorists? Today's air power leaders are influenced by the application of these theories. From these theories, air power leaders develop military strategy, doctrine, and training, all of which have a direct linkage to resources. Pape offers prescriptions regarding air acquisition, force postures, and doctrine. Since he believes strategic bombing does not work he argues that, "air forces should eschew stealthy aircraft and other weapons systems designed for

long-range strikes, and should invest instead in large numbers of less expensive aircraft optimized for ‘theater missions:’ interdiction, ground support, and winning local air superiority required to carry out such attacks.”³⁷

Warden’s theory supports an acquisition program strong in air superiority components (read F-22), strategic bombers and fighters, stealth, precision weapons with little emphasis on close air support aircraft. The associated support aircraft such as tankers for long range missions, command, control, communications, and intelligence platforms to see over the entire battlespace would also be required.

COMBINED THEORY

The world is an uncertain place and operations over the last 10-12 years have indicated that conflict will range from conventional warfare to unconventional warfare. Given this uncertainty, a combination of both theories best suits the current world environment. Warden provides an excellent analytical model to determine enemy centers of gravity and Pape reminds us of the synergistic effect of joint operations. Applying this combined theory to Kosovo and more recently to the war on terrorism, illustrates just how well these theories integrate.

In today’s war on terrorism, air power in Afghanistan was used to attack leadership, infrastructure and in direct support of fielded forces to achieve our political objectives. Air supremacy was gained by strategic attacks which eliminated the entire air defense threat. The close coordination between air power and special operations forces ensured the success of the ground actions. Throughout the campaign air power attacked leadership which disrupted and rendered, at least for now, the ability of Taliban leadership to control the situation.

In Kosovo, air power attacked strategic targets creating unrest among the population. However, air power only hampered Serbian forces from conducting cleansing operations. Had

leadership applied Pape's "hammer and anvil" theory by using ground forces and air power, then he contends coercive denial would have been more effective at stopping the cleansing. Taking ground forces out of the equation at the start of the conflict limited air powers ability to effectively employ against Serbian forces. Using a combined air power theory by employing strategic bombing on the population and infrastructure, using air and ground to attack the fielded forces, along with a coordinated diplomatic effort to pressure the government to comply with political objectives would have achieved the goal more efficiently.

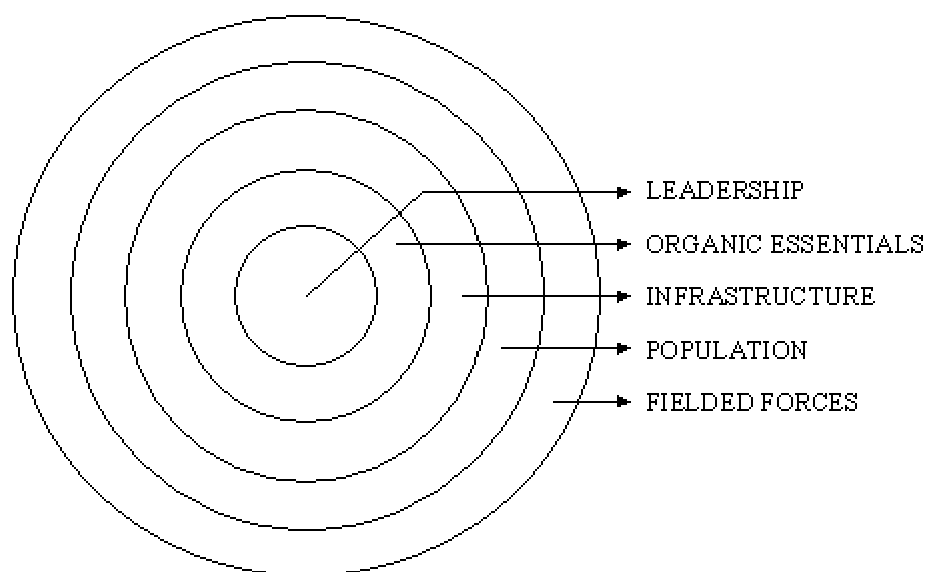
CONCLUSION

Air power is still a relatively new form of warfare and with the rapid advances in technology continues to offer more and more capabilities. The question at hand is how best to utilize these capabilities. Since DESERT STORM, John Warden's theory of air power has dominated senior leaders' notions of how to apply air power. The competing theory of Robert Pape now challenges today's air power leaders to re-examine air power theory. Analyzing air power theories and the application of air power since DESERT STORM provides support for a union between these two theories. It recognizes that leadership may not always be the center of gravity, but also takes advantage of the synergistic affect of attacking strategically and against fielded forces. This position is not without budgetary implications. The key for air power leaders is to balance the force based on theory and military strategy and then leverage technology to make up for the budgetary limitations to the number and types of platforms required to achieve objectives.

¹ John A. Warden III, "The Enemy as a System," *Air Power Journal*, Spring 1995: 42.

² John A. Warden III, "*The Air Campaign: Planning for Combat*," rev. ed., (San Jose: toExcel, 2000), p. 145.

Warden's 5-Ring Model



- Leadership – Most critical ring comprised of decision making entities, command and control nodes etc.
- Organic Essentials – Second most critical ring comprised of those facilities or processes a state requires to survive (raw materials, power generation facilities, etc.).
- Infrastructure – Third most critical ring comprised of the enemy's transportation system (rail lines, bridges, airfields, ports, etc.).
- Population – Fourth most critical ring. Very difficult to target (morally, internationally) directly. Best approached indirectly as North Vietnam did to the United States.
- Fieldded Forces – Least critical and most hardened by design. Campaigns focusing on this ring tend to be the longest and most bloody.

³ Ibid, p. 146.

⁴ Ibid, p. 145.

⁵ Ibid, p. 146.

⁶ Ibid, p. 146.

⁷ Ibid, p. 147.

⁸ Ibid, p. 7.

⁹ Ibid, p. 7.

¹⁰ Ibid, p. 131.

¹¹ Ibid, p. 10.

¹² Ibid, p. 13.

¹³ Ibid, p. 13.

¹⁴ Ibid, p. 133.

¹⁵ Ibid, p. 134.

¹⁶ Ibid, p. 134.

¹⁷ Ibid, p. 134.

¹⁸ Ibid, p. 134.

¹⁹ Ibid, p. 135.

²⁰ Robert A. Pape, *"Bombing to Win: Air Power and Coercion in War,"* (Ithaca and London: Cornell University Press, 1996), p. 318.

²¹ Ibid, p. 318.

²² Ibid, p. 318.

²³ Ibid, p. 318.

²⁴ Ibid, p. 1.

²⁵ Ibid, p. 13.

²⁶ Ibid, p. 10.

²⁷ Ibid, p. 30.

²⁸ Ibid, p. 31.

²⁹ Ibid, p 39.

³⁰ Ibid, p. 45.

³¹ Ibid, p. 46.

³² Ibid, p. 46.

³³ Ibid, p. 69.

³⁴ John A. Warden, III, "Terrorists are More Vulnerable than Most Realize," *USA Today*, 9 October 2001, p. 15.

³⁵ Robert A. Pape, *"Bombing to Win: Air Power and Coercion in War,"* (Ithaca and London: Cornell University Press, 1996), p. 74.

³⁶ Ibid, p. 314.

³⁷ Karl Mueller, "Strategies of Coercion: Denial, Punishment, and the Future of Air Power," *Security Studies* 7, no. 3 (Spring 1998): 209.

